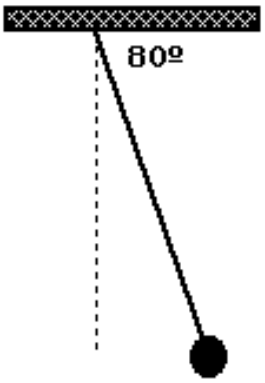
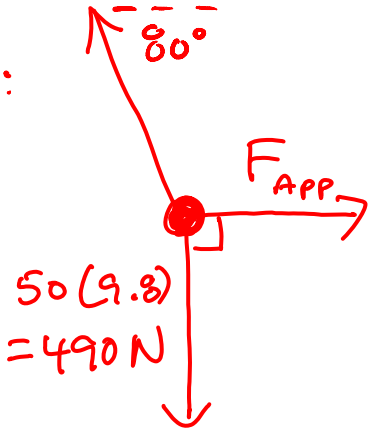
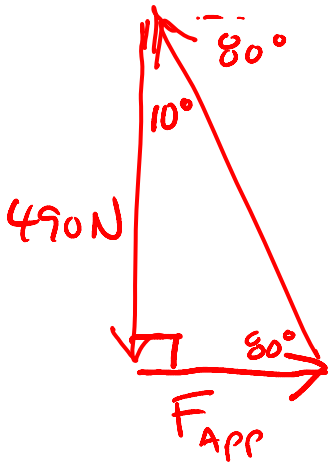
Example #3. A large mass of 50 kg is supported on the end of a rope and the rope is pulled back by a horizontal force so that the rope makes an angle of 80° with the ceiling to which the rope is attached. Make a forces diagram showing all the forces involved. Use this diagram to calculate what horizontal force is needed to pull the mass out this far.



f.b.d:





$$\frac{F_{APP}}{490} = \tan 10^\circ$$

$$F_{APP} = 86\ N$$